

No. 690,775.

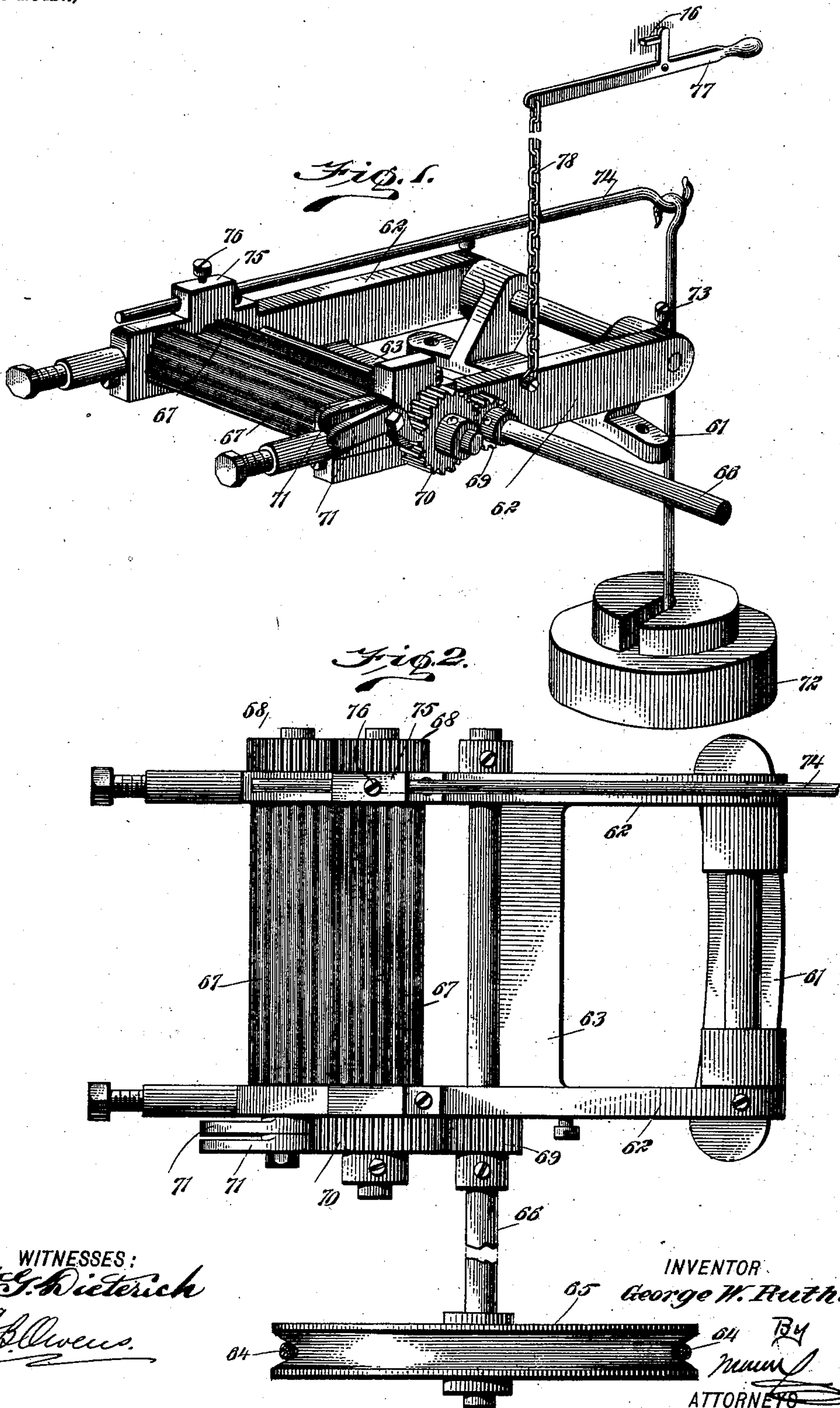
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G. W. RUTH.

TENSION DEVICE FOR KNITTING MACHINES.

(Application filed May 31, 1900.)

(No Model.)



WITNESSES:
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GEORGE WASHINGTON RUTH, OF NORRISTOWN, PENNSYLVANIA.

TENSION DEVICE FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 690,775, dated January 7, 1902.

Original application filed April 20, 1900, Serial No. 13,625. Divided and this application filed May 31, 1900. Serial No. 18,532. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WASHINGTON RUTH, a citizen of the United States, and a resident of Norristown, in the county of Montgomery and State of Pennsylvania, have invented a new and Improved Tension Device for Knitting-Machines, of which the following is a full, clear, and exact description.

This invention relates to a device especially adapted to circular-knitting machines by which the web is drawn uniformly from the needles, the object being to insure a uniform and regular tension on the web, by which means to produce effective work, this being a division of an application filed by me on the 20th day of April, 1900, Serial No. 13,625, for an improvement in knitting-machines.

This specification is the disclosure of one form of the invention, while the claims define the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a perspective view of the tension device, and Fig. 2 is a plan view thereof.

The mechanism comprises a foot 61, which is intended to be mounted fast upon the base or any other convenient part of the machine, it being understood that usually this base is a ring-like structure which permits the web to pass down through it. On the foot 61 is pivotally carried the tension-frame, which comprises two parallel side bars 62, rigidly connected by a cross-piece 63. This frame is mounted on the foot to move freely on a horizontal axis and is sustained in an approximately horizontal position by a belt 64, (see Fig. 2,) which is driven from the drive or primary-movement shaft of the knitting-machine or from any other desired source. The belt 64 passes around a grooved pulley 65, located outside of the frame of the machine. This pulley is fast on a shaft 66, which is mounted to turn loosely in the tension-frame. Therefore the belt 64 serves not only to rotate the shaft 66 in time with the movement of the other parts of the machine, but also to support the tension-frame and its parts in proper position. Mounted in the side bars 62 of the tension-frame are fluted or corrugated rollers 67, between which the web of knit goods passes. These rollers are geared with each other by pinions 68, fast on the respective axes of the rollers and meshing with each other, and the rollers are driven from the shaft 66 by means of gears 69 and 70, the former being fast on the shaft 66 and the latter gear being fast on the axis of the adjacent roller 67. For the purpose of preventing back movement of the rollers 67 I provide two pawls 71, which are pivoted on the side bar 62 that is adjacent to the gear 70 and which engage said gear. The pawls 71 are of different lengths, as indicated in Fig. 1, so that they will engage with different teeth of the gear 70.

It will be observed that the weight of this tension device is communicated to the web and that it is this weight which draws the web from the needles. Now for regulating the force which is applied to the web I provide a weight 72, which is hung by a rod 73 on the end of an arm 74, that crosses the axis of the tension-frame—i. e., the foot 61—and is fastened to the tension device near the free end thereof. This fastening is made by a box 75, through which the arm 74 passes, and a set-screw 76, carried in the box and engaging the arm. Since the force of this weight 72 is applied to the tension-frame at the side of its pivot opposite the side carrying the rollers 67, it will be seen that the weight counteracts the weight of the tension-frame, and therefore I regulate the force that is applied to the web. This may be effected either by increasing or diminishing the volume of the weight 72 or by adjusting the arm 74 in the box 75, preferably the latter, as the most convenient. When it is desired to lift up a tension device and relieve the web of the strain thereon, the attendant may throw down a lever 77, which is mounted suitably on the framing of the machine, as indicated at 16 in Fig. 1, at a point above the tension device and connected therewith by a chain 78 or the like.

This tension device is regular and sure in its operation, subjecting the web to a uniform strain and causing it to be drawn uniformly from the needles, thus producing regular and accurate work. In knitting-machines it is of paramount importance that the web be regularly drawn from the needles, since it is by

this that proper results can be obtained. It is further explained that the weight of the tension-frame being suspended on the belt 64 causes the belt to engage firmly with the pulley 65. When the tension device bears too forcibly on the web, the tension device will tend to climb up the web, owing to the action of the rollers 67, and this relieves the strain on the belt 64, and consequently the rollers 67 are not driven so fast. Therefore the tension device is to a great extent self-regulating.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A knitting-machine tension device, having a frame, tension-rollers mounted therein and geared together to turn in unison, a drive-shaft mounted in the frame parallel with the tension-rollers, a spur-gear carried on the drive-shaft outside of the frame, a spur-gear carried on one of the tension-rollers and meshed directly with the gear of the drive-

shaft, whereby the tension-rollers are driven, and two pawls mounted on a common pivot on the outer side of the frame, said pawls being extended in the same direction and being of different lengths to engage with different parts of the said spur-gear on the tension-roller.

2. A knitting-machine tension device, having a frame, tension-rollers mounted therein and geared together to turn in unison, a drive-shaft mounted in the frame parallel with the tension-rollers, a spur-gear on the drive-shaft at the outer side of the frame, and a spur-gear on one of the tension-rollers at the outer side of the frame and meshed directly with the spur-gear on the drive-shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE WASHINGTON RUTH.

Witnesses:

J. B. COLE JENKINS,
LIZZIE WEISS.